A new research paper suggests that selenium supplementation is associated with significant health benefits in HIV-positive people, including stabilized viral loads and moderate CD4 count gains. The nine-month placebo-controlled study, conducted by investigators at the University of Miami, was reported in the January 22 issue of the American Medical Association’s Archives of Internal Medicine.

Selenium, required by the body in small amounts, is a trace mineral that is essential to good health. Found in a number of plant-based foods, selenium is incorporated into proteins to make important antioxidant enzymes called selenoproteins. These selenoproteins help prevent cellular damage from free radicals. Free radicals are natural by-products of oxygen metabolism that may contribute to the development of chronic diseases such as immune deficiency, cancer, and heart disease.

Some studies have indicated that selenium levels can become decreased in people living with HIV. Low levels have been shown to be predictive of death in HIV-positive adults and children and have been linked to various irregularities – such as diminished natural killer cell activity and a greater risk of mycobacterial infections – often seen in the setting of HIV. Despite this knowledge, there has been very little information regarding the value of selenium supplementation in people with HIV, including those who don’t necessarily have decreased blood levels of the mineral.

With a grant from the National Institutes of Health, a team of investigators at the University of Miami conducted a double-blind, randomized, placebo-controlled trial evaluating once-daily supplementation with Selenomax® (selenium-enriched yeast). According to the investigators, Nutrition 21’s Selenomax was selected because it contains high concentrations of organic selenium and is known to be bioavailable (capable of raising selenium levels in the bloodstream after oral dosing). A Selenomax dose of 200 micrograms (μg) a day was used.

The study enrolled 262 patients, including 141 HIV-positive men and women randomized to take selenium and 121 selected to take placebo. In the selenium group, the average viral load at study entry was 24,558 and the average CD4 count was 417. In the placebo group, the average viral load was 10,491 and the average CD4 count was 440. Approximately 73% of patients in both groups were on antiretroviral treatment upon entering the study, yet only 36% had undetectable viral loads at the start of the trial.
The average blood selenium level, upon entering the study, was 111.9 μg/L. According to the study authors, this reflects a slightly depressed value, but is still a “nutritionally adequate level relative to healthy U.S. residents.” Of those enrolled in the study approximately 97% had selenium levels greater than 90 μg/L, a level considered minimally adequate for optimal selenoprotein activity in the body.

By the end of the study, 174 patients completed nine months of treatment (91 in the Selenomax group and 83 in the placebo group).

“Responders” in the Selenomax group were those who saw their blood selenium levels increase three standard deviations above the average blood selenium level achieved in the placebo group (an average blood selenium level gain of 26.1 μg/L or greater). Approximately 50 selenium-treated patients were dubbed responders. There were 41 selenium-treated “nonresponders,” defined as those who did not experience an average blood selenium level increases of 26.1 μg/L or greater.

Among those in the selenium group, patients who adhered to the study protocol – those who took the selenium supplements consistently – were more likely to be responders. Good adherence was documented in 86% of selenium responders, compared to 56% of selenium nonresponders.

After nine months of treatment, selenium responders did not experience significant increases in viral load, compared to an average 0.29 log viral load increase among the selenium nonresponders. Increases in viral load were also documented in the placebo group. The viral load difference between the selenium responders and the selenium nonresponders and placebo recipients were statistically significant, meaning that it wasn’t due to chance.

An immunologic benefit was documented as well. Among the selenium-treated responders, there was an average CD4 count increase of approximately 30 cells, compared to a CD4 count decrease of approximately 25 cells among the selenium nonresponders and placebo recipients.

While the authors argue that more research needs to be conducted to better understand why selenium supplementation has a therapeutic effect on viral load and CD4 cell counts – independent of the effects of standard antiretroviral therapy – the study confirms that there is, in fact, a therapeutic benefit in HIV.

“This study builds on previous research showing selenium’s potential role as an antioxidant in immune health and the possible consequences of selenium deficiency in people living with HIV/AIDS,” says Barry Hurwitz, PhD, Professor of Psychology and Medicine at the University of Miami and lead investigator of the study. “The results support the use of high selenium yeast as an inexpensive, safe nutritional therapy in HIV spectrum disease.”

Source: